AMENDMENTS TO THE CLAIMS:

Please replace the claims with the claims provided in the listing below wherein status, amendments, additions and cancellations are indicated.

1. (Currently Amended) Microcolumn reactor for carrying out reactions on solid phases and/or biological cells comprising at least a first and a second substrate wafer being engaged to one another in a common plane, whereby at least one longitudinally extending channel is inserted into at least one of said substrate wafers, said channel, in a preselectable section of its length, being captured by two passage openings, which are passed through ~~the~~ an opposite substrate wafer, wherein the passage openings are separated from the channel by a partially permeable sieve-like membrane, the membrane having transmission areas so dimensioned that they preselectably prevent micro-beads and/or cells, which are introduced into the channel, from entering into the passage openings, and the channel is provided with at least two further openings outside of the section captured by said passage openings, said at least two further openings being adapted to enable a loading and/or a displacement of the micro-beads and/or cells, provided above the section captured by said preselectable channel section, by applying a fluidic pressure, and further comprising means for temporarily closing at least one of the passage openings and one of the further openings.

2. (Previously Presented) The microcolumn reactor as claimed in claim l, wherein glass is selected for the first substrate wafer and a silicon wafer for the second substrate wafer, whereby the channel is inserted into the glass plate and the surface of the silicon wafer opposing said glass plate is entirely covered by a coat, into which a micro-structurized perforation is provided at least in the section of the passage openings, said micro-structurized perforation being for forming transmission areas.

3. (Previously Presented) The microcolumn reactor as claimed in claim 1, wherein at least one of a glass plate and a plate made of synthetic material is selected for the first and/or for the second substrate wafer, the channel is inserted into the first substrate wafer and the surface of the second substrate wafer opposing said first substrate wafer is entirely covered by a membrane, into which a micro-structurized perforation is provided at least in the section of the passage openings, said micro-structurized perforation being for forming transmission areas.

4. (Previously Presented) The microcolumn reactor as claimed in claim 3, wherein the membrane is a perforated polymeric foil.

5. (Previously Presented) The microcolumn reactor according to claim 2, wherein the first and the second substrate wafers are anodically bonded to one another.

6. (Previously Presented) The microcolumn reactor according to claim 2 or 3, wherein the first and the second substrate wafers are connected to one another by adhesives outside of the channel.

7. (Previously Presented) The microcolumn reactor according to claim 3, wherein the first and the second substrate wafers are attached to one another by externally provided clamping means.

8. (Previously Presented) The microcolumn reactor according to claim 1, 2, or 3, wherein said passage openings are connected to a second channel in the second substrate wafer and the second channel extends to a rim of the substrate.

9. (Previously Presented) The microcolumn reactor, according to one of claims 1-5 and 7, wherein the channel is defined by a plurality of passage openings, and respectively correlated passage openings, which constitute an inlet and an

outlet, and passage openings, which define a section of the channel, are arranged relative to one another equidistantly or at different distances.

10. (Previously Presented) The microcolumn reactor according to claim 9, wherein said plurality of the correlated passage openings are alternatively on a common substrate wafer or fluidically connect a plurality of discrete microcolumn reactors, the respective distances between correlated passage openings, each pair of which together form one inlet and one outlet, being of different length, as determined by requirements of an actual reaction process.

11. (Previously Presented) The microcolumn reactor according to claim 1, wherein a plurality of substrate wafers, each having a channel and at least two passage openings therein, are fluidically interconnected with one another in a manner selected from: in parallel in a single plane, serially in a plurality of planes, and in a matrix, combining both parallel, single plane and series, multi-plane interconnections, and wherein further components are provided at preselectable connection sites.

12. (Previously Presented) The microcolumn reactor according to claim 1, wherein a plurality of substrate wafers, each having a channel and at least two

passage openings therein, are fluidically interconnected with one another in a manner selected from: in parallel in a single plane, serially in a plurality of planes, and in a matrix, combining both parallel, single plane and series, multi-plane interconnections, and wherein further micro-structurized components are provided and integrated in the entire system.

13. (Previously Presented) The microcolumn reactor according to claim 2, wherein the passage openings are positioned perpendicular to an exterior surface of said second substrate wafer, and each passage opening having an hourglass shape formed by two frusto-pyramidal sections, each with large and small base surfaces, said two frusto-pyramidal sections abutting one another and inverted upon one another at an intersection of their said small base faces, said second substrate wafer is an Si(100)-wafer having an etching mask on two opposite faces thereof, a first etching mask on one face of said second substrate wafer having transmission areas at least across said passage openings, and a second etching mask on an opposite face of said second substrate mask being provided with recesses having openings which correspond to a smallest inside cross section of said passage openings.

14. (Previously Presented) The microcolumn reactor according to claim 8, wherein said second substrate wafer is one of a Si-wafer of 100-orientation and 110-orientation, which has a sieve pore membrane mask structure on a side thereof, which, in a vicinity of said second channel further has a window corresponding to a width of said second channel, said window extending up to a rim of said second substrate wafer, and an opposite side of said second substrate wafer is entirely covered by a protective etching resistant coating.

15. (Previously Presented) The microcolumn reactor according to claim 1, wherein the membrane is a nano-porous, thin-layer membrane, having pore sizes of 5 to 500 nm.

16. (Canceled).